Chemical/Biological Terrorism
October, 2003

1: Am J Public Health. 2003 Oct;93(10):1640-2.
A global network for early warning and response to infectious diseases and bioterrorism: applied epidemiology and training programs, 2001.
Sandhu HS, Thomas C, Nsubuga P, White ME.
At the time of the study, the authors were with the Division of International Health, Epidemiology Program Office, Centers for Disease Control and Prevention, Atlanta, Ga.

In many ministries of health, applied epidemiology and training programs (AETPs) are responsible for detecting and responding to acute health events, including bioterrorism. In November 2001, we assessed the bioterrorism response capacity of 29 AETPs; 17 (59%) responded. Fifteen countries (88%) had bioterrorism response plans; in 6 (40%), AETPs took the lead in preparation and in 6 (40%) they assisted. Between September 11 and November 29, 2001, 12 AETPs (71%) responded to a total of 3024 bioterrorism-related phone calls. Six programs (35%) responded to suspected bioterrorism events. AETPs play an important role in bioterrorism surveillance and response. Support for this global network by various health agencies is beneficial for all developed and developing countries.
PMID: 14534215 [PubMed - in process]

2: Ann Intern Med. 2003 Sep 2;139(5 Pt 1):I49.
Original report in:
Ann Intern Med. 2003 Sep 2;139(5 Pt 1):337-45.
Summaries for patients. Screening for inhalational anthrax after a bioterrorist attack. [No authors listed]
Publication Types: Patient Education Handout
PMID: 12965957 [PubMed - indexed for MEDLINE]

3: Ann Intern Med. 2003 Sep 2;139(5 Pt 1):337-45.
Comment in:
Ann Intern Med. 2003 Sep 2;139(5 Pt 1):379-81.
Summary for patients in:

Ann Intern Med. 2003 Sep 2;139(5 Pt 1):I49.
Accuracy of screening for inhalational anthrax after a bioterrorist attack.
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BACKGROUND: Bioterrorism using anthrax claimed five lives in the United States in 2001 and remains a potential public health threat. In the aftermath of a large-scale anthrax attack, mass screening to identify early inhalational anthrax may improve both the management of individual cases and the efficiency of health resource utilization. PURPOSE: To develop the evidence base for outpatient anthrax screening protocols by quantifying differences in clinical presentation between inhalational anthrax and common viral respiratory tract infections. DESIGN: Review, compilation, and data extraction from
English-language case reports of inhalational anthrax and epidemiologic studies of influenza and other viral respiratory infections. DATA SOURCES: 13 reports of 28 cases of inhalational anthrax from 1920 to 2001 and 5 studies reporting on the clinical features of 2762 cases of influenza and 1932 cases of noninfluenza viral respiratory disease. DATA SYNTHESIS: Characterization of presenting clinical symptoms in anthrax and viral disease and calculation of likelihood ratios for the presence of selected clinical features. RESULTS: Fever and cough do not reliably discriminate between inhalational anthrax and viral respiratory tract infection. Features suggestive of anthrax include the presence of nonheadache neurologic symptoms (positive likelihood ratio cannot be
calculated), dyspnea (positive likelihood ratio, 5.3 [95% CI, 3.7 to 7.4]), nausea or vomiting (positive likelihood ratio, 5.1 [CI, 3.0 to 8.5]), and finding of any abnormality on lung auscultation (positive likelihood ratio, 8.1 [CI, 5.3 to 12.5]). In contrast, rhinorrhea (positive likelihood ratio, 0.2 [CI, 0.1 to 0.4]) and sore throat (positive likelihood ratio, 0.2 [CI, 0.1 to 0.5]) are more suggestive of viral respiratory tract infection. CONCLUSION:
Inhalational anthrax has characteristic clinical features that are distinct from those seen in common viral respiratory tract infections. Screening protocols based on these features may improve rapid identification of patients with presumptive inhalational anthrax in the setting of a large-scale anthrax attack.
PMID: 12965942 [PubMed - indexed for MEDLINE]

4: Clin Med. 2003 May-Jun;3(3):255-9.
Anticipating smallpox as a bioterrorist weapon.
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The threat of bioterrorism means it is important to be able to diagnose smallpox. The responsibility for the initial recognition of cases lies with clinicians, and early diagnosis is the key to the successful control of an outbreak. Unless rapidly contained, a bioterrorist release of smallpox would constitute not just a national but a global threat to health. This brief review sets smallpox in its modern context as an infection potentially spread by bioterrorists and recommends sources of information from the twentieth century that will assist clinicians in diagnosing the disease.
Publication Types: Review Review, Tutorial
PMID: 12848261 [PubMed - indexed for MEDLINE]

5: Crit Rev Microbiol. 2003;29(2):177-82; discussion 183-90.
Commentary on Dr. Alan P. Zelicoff's analysis (No. 7).
Woodall J.
Nucleus for the Investigation of Emerging Infectious Diseases, Department of Medical Biochemistry, Institute of BiomedicalSciences, Federal University of Rio de Janeiro, Brazil.
Publication Types: Historical Article
PMID: 12901686 [PubMed - indexed for MEDLINE]

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Commentary on Dr. Alan P. Zelicoff's analysis (No. 6).
Popov S.
Hadron Corporation, USA.
Publication Types: Historical Article
PMID: 12901685 [PubMed - indexed for MEDLINE]

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Commentary on Dr. Alan zelicoff's Analysis of the Aralsk outbreak (No. 4).
Jahrling PB.
U.S. Army Medical Research Institute of Infectious Disease, 1425 Porter Street, Frederick, MD 21702-5011, USA.
Publication Types: Historical Article
PMID: 12901683 [PubMed - indexed for MEDLINE]

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The 1971 smallpox outbreak in the Soviet city of Aralsk: implications for Variola virus as a bioterrorist threat. Introduction.
Tucker JB, Zilinskas RA.
Chemical and Biological Weapons Nonproliferation Program, Center for Nonproliferation Studies, Monterey Institute of International Studies. USA.
Publication Types: Historical Article
PMID: 12901676 [PubMed - indexed for MEDLINE]

9: Crit Rev Microbiol. 2003;29(2):163-7; discussion 183-90.
Commentary on the 1971 smallpox epidemic in Aralsk, Kazakhstan, and the Soviet Biological Warfare Program (No. 2).
Gilsdorf JR.
Pediatric Infectious Diseases, University of Michigan Medical Center, L2225 Women's Hospital, Ann Arbor, Michigan 48109-0244, USA.
Publication Types: Historical Article
PMID: 12901681 [PubMed - indexed for MEDLINE]

10: Crit Rev Microbiol. 2003;29(2):169-70; discussion 183-90.
Commentary on Dr. Alan Zelicoff's epidemiological analysis of the Aralsk outbreak (No. 3).
Henderson DA.

Center for Civilian Biodefense Strategies, The Johns Hopkins University, Baltimore, Maryland, USA.
Publication Types: Historical Article
PMID: 12901682 [PubMed - indexed for MEDLINE]

11: Crit Rev Microbiol. 2003;29(2):97-108.
An epidemiological analysis of the 1971 smallpox outbreak in Aralsk, Kazakhstan.
Zelicoff AP.
Sandia National Laboratories.
Publication Types: Historical Article
PMID: 12901677 [PubMed - indexed for MEDLINE]

12: Curr Drug Targets Infect Disord. 2003 Sep;3(3):255-62.
Vaccine development for potential bioterrorism agents.
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Vaccines are considered to be one of the most effective ways of combating disease caused by bioterrorism agents. Such vaccines must be able to provide protection against pathogens which might enter the body by a number of routes, including the respiratory tract. They should also be able to induce protective immunity rapidly and would ideally be given non-invasively. There are few vaccines which currently meet these requirements. In part, this reflects the low level of research on many bioterrorism agents over the past few decades. Little is known about basic mechanisms of pathogenicity of many of these agents. However, by their very nature these agents cause serious disease, and must be handled in high containment laboratories. This requirement also limits the speed and ease with which research on these pathogens can now take place. Against this background, research on vaccines against potential bioterrorism agents is likely to proceed along two lines. Firstly because the genome sequences of most of the
principal bioterrorism agents have either been completed or are close to completion, there is likely to be reliance on the exploitation of this information to devise improved vaccines. A number of groups are working on methodologies to identify vaccine antigens directly from genome sequences. Secondly, there will be a need to formulate such vaccines appropriately for the rapid induction of protective immunity after non-invasive delivery. The prospects for the development of a new generation of bioterrorism vaccines which exploit these technologies are reviewed in this manuscript.
PMID: 14529358 [PubMed - in process]

13: Drug Discov Today. 2003 Oct 1;8(19):881-8.
Prevention and treatment of bacterial diseases caused by bacterial bioterrorism threat agents.
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There is general consensus that the bacterial agents or products most likely to be used as weapons of mass destruction are Bacillus anthracis, Yersinia pestis, Francisella tularensis and the neurotoxin of Clostridium botulinum. Modern supportive and antimicrobial therapy for inhalational anthrax is associated with a 45% mortality rate, reinforcing the need for better adjunctive therapy and prevention strategies. Pneumonic plague is highly contagious, difficult to recognize and is frequently fatal. Therefore, the development of vaccines against this agent is crucial. Although tularemia is associated with low mortality, the highly infectious nature of aerosolized F. tularensis poses a
substantive threat that is best met by vaccine development. Safer antitoxins and a vaccine are required to meet the threat of the use of botulinum toxin as a weapon of mass destruction. In this article, the current status of research in these areas is reviewed.
PMID: 14554016 [PubMed - in process]
14: Emerg Infect Dis. 2003 Sep;9(9):1053-7.
Automated laboratory reporting of infectious diseases in a climate of bioterrorism.
M'ikantha NM, Southwell B, Lautenbach E.
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While newly available electronic transmission methods can increase timeliness and completeness of infectious disease reports, limitations of this technology may unintentionally compromise detection of, and response to, bioterrorism and other outbreaks. We reviewed implementation experiences for five electronic laboratory systems and identified problems with data transmission, sensitivity, specificity, and user interpretation. The results suggest a need for backup transmission methods, validation, standards, preserving human judgment in the process, and provider and end-user involvement. As illustrated, challenges encountered in deployment of existing electronic laboratory reporting systems could guide further refinement and advances in infectious disease surveillance.
PMID: 14519239 [PubMed - in process]

15: Ethn Dis. 2003 Summer;13(3 Suppl 3):S3-58-62.
Responding to bioterrorism.
Wetterhall SF.
DeKalb County Board of Health, Center for Public Health Preparedness, Atlanta, Georgia, USA.
PMID: 14552456 [PubMed - in process]

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Ready and willing? Physicians' sense of preparedness for bioterrorism.
Alexander GC, Wynia MK.
Division of General Internal Medicine, MacLean Center for Medical Ethics, University of Chicago Hospitals, USA.

Little is known about contemporary physicians' sense of preparedness for bioterrorism, willingness to treat patients despite personal risk, or belief in the professional duty to treat during epidemics. In a recent national survey few physicians reported that they or their practice are "well prepared" for bioterrorism. Still, most respondents reported that they would continue to care for patients in the event of an outbreak of "an unknown but potentially deadly illness," although only a

narrow majority reported believing in a professional duty to treat patients in epidemics. Preparing physicians for bioterrorism
should entail providing practical knowledge, preventive steps to minimize risk, and reinforcement of the profession's ethical duty to treat.
PMID: 14515895 [PubMed - in process]

17: Intern Med J. 2003 May-Jun;33(5-6):242-53.
Comment in:
Intern Med J. 2003 May-Jun;33(5-6):213-4.
Biological weapons preparedness: the role of physicians.
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The real risk posed by biological weapons was demonstrated with the distribution of anthrax spores via the USA postal service in 2001. This review outlines the central roles of physicians in optimizing biopreparedness in Australia, including maintaining awareness of the risk, promptly recognizing an event, notifying appropriate authorities upon suspicion of an event, and instituting appropriate management. Management aspects covered include appropriate diagnostic tests, infection control procedures, and empirical therapy of agents considered possible biological weapons. The critical role of physicians as public health advocates working to prevent the use of biological weapons is also outlined.
Publication Types: Review Review, Tutorial
PMID: 12752895 [PubMed - indexed for MEDLINE]

18: Intern Med J. 2003 May-Jun;33(5-6):213-4.
Comment on:
Intern Med J. 2003 May-Jun;33(5-6):242-53.
The difference between biological warfare and bioterrorism: Australia finally makes a start towards real preparedness for bioterrorism.
Grayson ML.
Publication Types: Comment Editorial
PMID: 12752887 [PubMed - indexed for MEDLINE]

19: J Clin Microbiol. 2003 Jul;41(7):2801-9.
Laboratory safety practices associated with potential agents of biocrime or bioterrorism.
Sewell DL.
Pathology and Laboratory Medicine Service, Veterans Affairs Medical Center, and Department of Pathology, Oregon Health and Sciences University, Portland, Oregon 97239, USA. david.sewell@med.va.gov
Publication Types: Review Review, Tutorial
PMID: 12843004 [PubMed - indexed for MEDLINE]

20: J Emerg Med. 2003 May;24(4):463-7.
The history of anthrax.
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California, USA.

Anthrax, a potentially fatal infection, is a virulent and highly contagious disease. Descriptions of this disease begin in antiquity, with the best ancient account being by the Roman poet Virgil. During the 19th century, anthrax was the infection involved in several important medical developments. It served as the prototype for Koch's postulates regarding the causation of infectious disease. The first vaccine containing attenuated live organisms was Louis Pasteur's veterinary anthrax vaccine. In the 1900s, human inhalation anthrax occurred sporadically in the United States among textile and tanning workers, but the incidence of the illness had declined dramatically. An outbreak of inhalation anthrax occurred in Sverdlovsk near a Soviet military microbiology facility in
1979. This epidemic represented the largest documented outbreak of human inhalation anthrax in history. In October and November 2001, 22 cases of confirmed or suspected inhalation and cutaneous anthrax were reported associated with the intentional release of the organism in the United States. An additional case of cutaneous disease occurred in March of 2002.
Publication Types: Historical Article
PMID: 12745053 [PubMed - indexed for MEDLINE]

21: J Okla State Med Assoc. 2003 Jul;96(7):309-12.
Chemical agents as potential weapons of mass destruction.
Greenfield RA, Brown BR, Hutchins JB, Jackson R.
Infectious Diseases Section, Department of Medicine, College of Medicine, University of Oklahoma Health Sciences Center, USA. Ronald-Greenfield@ouhsc.edu
Publication Types: Review Review, Tutorial
PMID: 12955975 [PubMed - indexed for MEDLINE]

22: J Okla State Med Assoc. 2003 May;96(5):214-7.
Other bacterial diseases as a potential consequence of bioterrorism: Q fever, brucellosis, glanders, and melioidosis.
Voskuhl GW, Cornea P, Bronze MS, Greenfield RA.
Department of Medicine, Section of Infectious Diseases, University of Oklahoma Health Sciences Center, Department of Veterans Affairs Medical Center, Oklahoma City.
Publication Types: Review Review, Tutorial
PMID: 12833721 [PubMed - indexed for MEDLINE]

23: Lancet. 2003 Aug 23;362(9384):626.
Smallpox: preparation without inoculation.
Nelson K.
Publication Types: News
PMID: 12947947 [PubMed - indexed for MEDLINE]

24: Minn Med. 2003 Jun;86(6):20-5.
Smallpox vaccination: the Minnesota story.
Golden G.
PMID: 12834209 [PubMed - indexed for MEDLINE]

25: MMWR Morb Mortal Wkly Rep. 2003 Oct 3;52(39):937-8.
Follow-up of deaths among U.S. Postal Service workers potentially exposed to Bacillus anthracis--District of Columbia, 2001-2002.
Centers for Disease Control and Prevention (CDC).

In October 2001, two letters contaminated with Bacillus anthracis spores were processed by mechanical and manual methods at the U.S. Postal Service (USPS) Brentwood Mail Processing and Distribution Center in the District of Columbia. Four postal workers at the Brentwood facility became ill with what was diagnosed eventually as inhalational anthrax; two died. The facility was closed on October 21, and postexposure prophylaxis was recommended for approximately 2,500 workers and business visitors. Subsequent reports of deaths of facility workers prompted concern about whether mortality was unusually high among workers, perhaps related to the anthrax attacks. To evaluate the rates and causes of death among workers at the Brentwood facility during October 12, 2001-October 11, 2002, CDC, in collaboration with state and local health departments, analyzed death certificate data. In addition, these data were compared with aggregate mortality data from the five USPS facilities contaminated with B. anthracis during the fall 2001 anthrax attacks. This report summarizes the results of that analysis, which indicate that rates and causes of death among Brentwood workers during the 12 months after the anthrax attacks of 2001 were not different from rates and causes of deaths that occurred during the preceding 5 years.
PMID: 14523371 [PubMed - indexed for MEDLINE]

26: MMWR Morb Mortal Wkly Rep. 2003 Oct 3;52(39):938-40.
Recognition of illness associated with exposure to chemical agents—United States, 2003.
Centers for Disease Control and Prevention (CDC).

Since September 11, 2001, concern has increased about potential terrorist attacks involving the use of chemical agents. In addition, recent cases involving intentional or inadvertent contamination of food with chemicals have highlighted the need for health-care providers and public health officials to be alert for patients in their communities who have signs and symptoms consistent with chemical exposures. For example, in February 2003, a Michigan supermarket worker was charged with intentionally contaminating 200 lbs. of meat with a nicotine-containing insecticide. Although intentional release of chemical agents might be an overt event (i.e., one whose nature reveals itself), such as release of a nerve agent in a subway or a large explosion of a chemical container, a
chemical release might instead be a covert event (i.e., an unrecognized release in which the presence of ill persons might be the first sign of an exposure), such as deliberate contamination of food, water, or a consumer product. To increase the likelihood that health-care providers will recognize a chemical-release-related illness and that public health authorities will implement the appropriate emergency response and public health actions, CDC identified examples of chemical-induced illness and created appropriate guidance for health-care providers and public health personnel. This report summarizes
the epidemiologic clues and clinical signs or patterns of illness that might suggest covert release of a chemical agent. CDC is working to develop national surveillance capabilities for detecting chemical-release-related illnesses.

PMID: 14523372 [PubMed - indexed for MEDLINE]

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Comment on:
N J Med. 2003 Apr;100(4):12-9; quiz 19-22.
State epidemiologist, Eddy Bresnitz, MD, MS, on bioterrorism.
Porwancher R.
Publication Types: Comment Letter
PMID: 12955807 [PubMed - indexed for MEDLINE]

28: N Y State Dent J. 2003 May;69(5):31-5.
Quick reference guide. Biological weapons.
American Medical Association.
PMID: 12875137 [PubMed - indexed for MEDLINE]

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Why should dentists be involved in bioterrorism?
Miller DJ.
PMID: 12875132 [PubMed - indexed for MEDLINE]

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We've got the skills. Let's use them.
Downes EJ.
Publication Types: Editorial
PMID: 12875134 [PubMed - indexed for MEDLINE]

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Faster detection & better vaccines.
[No authors listed]
PMID: 12813941 [PubMed - indexed for MEDLINE]

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Building corporate castles, Part 2.
Teeples J.
PMID: 12813943 [PubMed - indexed for MEDLINE]

33: Vet Hum Toxicol. 2003 Oct;45(5):247-8.
Calls about anthrax to the Texas Poison Center Network in relation to the anthrax bioterrorism attack in 2001.
Forrester MB, Stanley SK.
Texas Department of Health, 11 W 49th Street, Austin, Texas 78756, USA.

Between October 4, 2001 and November 20, 2001, 22 cases of anthrax were identified in a bioterrorism attack on the US. This study examined the patterns of anthrax calls before and after the bioterrorist attack based on calls received by poison centers in Texas, a state that reported no anthrax cases as a result of the

attack. During 1998-2002, 553 calls about anthrax were received. The majority of the anthrax calls occurred in 2001 (n = 489, 88.4%) and 2002 (n = 52, 9.4%). The number of calls increased greatly in the days after October 4, 2001, reaching a peak of 31 anthrax calls in 1 d and then declining sharply in succeeding months. However, by December 2002 the number of calls about anthrax still had not returned to pre-attack levels. This study demonstrated the value of poison centers in documenting public need for information on biological
agents used in a terrorist attack, even if the attack did not occur in the area serviced by the poison center. Poison centers may expect to receive calls regarding a bioterrorist attack shortly after the public became aware of the attack and will continue to receive related calls for months afterward. Poison centers need to be prepared with appropriate information prior to such attacks to provide to the public upon request.
PMID: 14513892 [PubMed - in process]